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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,580	12/05/2005	Yasuhiro Okuda	073759-0015	2653

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EXAMINER
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LOUIE, MANDY C

ART UNIT	PAPER NUMBER
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1792

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03/25/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/559,580	<b>Applicant(s)</b> OKUDA ET AL.	
	<b>Examiner</b> MANDY C. LOUIE	<b>Art Unit</b> 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/11/06, 12/05/05</u> .                                       | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 9-11, 18-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
  - a. Regarding claims 9-11, 18, 21-22, 29, and 35 the term "soluble polymer" is considered indefinite since the solubility of the polymer would depend upon the type of solvent, where a solvent is neither disclosed; therefore, the metes and bounds of the limitation are not defined.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 5-6, 8, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haga [JP 2003059611] in view of Dews [US 3859139].

Regarding claim 1, Haga teaches a method of making an anisotropic conductive sheet [title] with perforations (cavities), where the sheet is made of porous [abstract], resin material [0011]. The prior art also teaches forming a plurality of perforations extending through the first surface of the porous resin base to the second surface of the porous resin base [Fig. 2] and treating surface of such cavities with a metal coating [abstract]. Haga is silent to steps 1-2, and 4 of the instant claim. Dews remedies this.

Regarding claim 1, Dews teaches a method of making a composite, where the method includes filling the pores of a porous hydrophilic matrix with a filler, solidifying

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the filler, treating the matrix while the filler is in solidified form, and thereafter removing the filler [abstract], where the matrix may comprise of polymeric material [col 2, ln 18].

It would have been obvious to one with ordinary skill in the art at the time of the invention to impregnate the porous base with a liquid or solution. One would have been motivated to do so to prevent unwanted treatment of the internal pores of the porous base [Dews, col 2, ln 5-7] and to desirably treat specific areas (i.e. surface of cavities) of the porous base for a desirable final product.

Regarding claims 5 and 6, Haga in view of Dews teaches the liquid is a substance having a solidifying point or melting point within a range of -150 to 150°C which is water [Dews, col 3, ln 17].

Regarding claim 8, Haga in view of Dews teaches the substance having a solidifying point or melting point within the range of from -150 to 150°C is impregnated into the porous matrix, where the substance is solidified at a temperature not higher than the solidifying point or melting point to form a solid substance, and then at a higher temperature than the solidifying point or melting point the substance is then removed [Dews, col 3, ln 15-25]. It would have been apparent to one with ordinary skill in the art that such impregnation step of the substance would be facilitated as liquid form under temperature conditions.

Regarding claim 17, Haga in view of Dews teaches the cavities may be made by using synchrotron radiation and a laser beam (etching by light abrasion) [Haga, 0015].

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and further in view of Aubrey [US 4978452].

Teaching of Haga in view of Dews is aforementioned. Aubrey is provided for further evidence.

Regarding claim 1, it would have been obvious to impregnate a porous base with a solidifying agent prior to making the perforations. One would have been motivated to do so in order to increase dimensional control and cost reductions [Aubrey, col 4, ln 50-53].

6. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and further in view of Miura [Abstract: The influence of node-fibril morphology on healing of high porosity expanded polytetrafluoroethylene grafts].

Teaching of Haga in view of Dews is aforementioned. Miura is provided for further evidence.

Regarding claims 2 and 3, Haga in view of Dews teaches the porous resin sheet can be distraction polytetrafluoroethylene or ePTFE (expanded polytetrafluoroethylene) [0011]. Miura provided evidence that such acronym and fibril-node microstructure is common to expanded polytetrafluoroethylene [abstract] and known to one with ordinary skill in the art.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and further in view of Weege [Basic Impregnation Techniques].

Teaching of Haga in view of Dews is aforementioned. The prior art is silent to use casting or a dipping method for impregnation. Weege remedies this.

Regarding claim 4, Weege teaches basic impregnation techniques [title], where dipping [pg 710, col 1] and full encapsulation (casting) [pg 715, col 1] are disclosed.

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It would have been obvious to one with ordinary skill in the art at the time of the invention to use either dipping or casting for impregnation. One would have been motivated to do so for various advantages such as increasing simplicity and ease [Weege, pg 710, col 1], cost-effectiveness [Weege, pg 711, col 2], or environmental friendliness [Weege, pg 715, col 1].

8. Claims 7, 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and further in view of Hashizume [US 5946556].

Teaching of Haga in view of Dews is aforementioned, but is silent to teaching using a paraffin having a melting point of at least 15°C. Hashizume remedies this.

Regarding claims 7 and 9-10, Hashizume teaches a method of fabricating a semiconductor device, where a paraffin wax is used to mask a cavity in the device [abstract]. The prior art further teaches the paraffin wax solidifies at room temperature (i.e. 15°C) [col 11, ln 3-6], where it would have been apparent that the melting point of the paraffin would have been at least 15°C or higher. Moreover, it would have been obvious to one with ordinary skill in the art to elect a substance with optimal solidifying or melting temperature that is similar to the substance provided by the prior art to expect similar material properties.

It would have been obvious to one with ordinary skills in the art at the time of the invention to use paraffin as the solidifying material. One would have been motivated to do so to for its optimum melting property and optimum vaporizing property [Hashizume, col 8, ln 12-13].

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9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and further in view of Amundson [US 6498114].

Teaching of Haga in view of Dews is aforementioned, but is silent to the limitation of claim 11. Amundson remedies this.

Regarding claim 11, Amundson teaches using a solvent-base polymer as a mask, where the solvent based polymer may be removed with a solvent [col 7, ln 1-2].

It would have been obvious to one with ordinary skills in the art at the time of the invention to using a soluble polymer as a mask and use a solvent to remove such mask. One would have been motivated to do so to avoid imparting substantial effects to the base [Amundson, col 7, ln 5] (i.e. damage).

10. Claims 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and Amundson and further in view of Orio [US 4533445] and Formanek [US 5128207].

Teaching of Haga in view of Dews and Amundson is aforementioned and further teaches a polymer may be cured to form a mask [Amundson, col 6, ln 66-67], but is silent to the limitations of claims 12-16. Orio and Formanek remedies this.

Regarding claims 12-16, Orio teaches a U.V. curable coating composition comprising acrylated or methacrylated oligomers is suitable as a mask for electronic devices [abstract], where it would have been apparent that the composition would undergo chemical reaction upon exposure to U.V. light.

It would have been obvious to one with ordinary skills in the art at the time of the invention to use a U.V. masking composition. One would have been motivated to do so

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to increase savings in terms of energy consumption, equipment, space and time [Orio, col 1, ln 30-33].

Regarding claims 12-16, Formanek provides further evidence that polymethyl methacrylate (part of the methacrylate family) in solution is known in the art to be used as a mask suitable for micro-electronics [col 1, ln 20-25]; where the prior art teaches such mask can be removed by a solvent such as acetone [Amundson, col 7, ln 3], also evidenced by the applicant's specification in paragraph 0152.

11. Claims 18-19, 22, 24-25, 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and Aubrey and Amundson and Ferrara [US3791939].

Teaching of Haga in view of Dews and Aubrey and Amundson is aforementioned.

Regarding claims 18-19, 22, 24, 27-28, Haga in view of Dews and Aubrey and Amundson further discloses using a casting method allows the porous base to be impregnated to form layers of the solid substances on first and opposite second surfaces of the base [Aubrey, Fig. 3], where it would have been obvious to one with ordinary skill in the art at the time of the invention to form a layer of the solid substance on the first and opposite second surfaces of the porous base. One would have been motivated to do so in order to ensure complete impregnation and improve fabrication of the product. Moreover, the prior art teaches coating the inner cavities of the porous base with a metal layer using plating [Haga, 0016]; where it is disclosed that electroless deposition is known in the art for plating metal layers within such cavities [Haga, 0006].

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Regarding claims 18-19, 22, 24, 27-28, Ferrara is provided as evidence to support that electroless plating requires a catalyzation step which the surface to be electrolessly plated with a metal has placed thereon a material, which is usually a metal salt and described as a catalyst to provide nucleating sites for the metal [col 1, ln 54-65].

Regarding claims 25, Haga in view of Dews and Aubrey and Amundson and Ferrara teaches such solvent may be acetone, where it would have been apparent that such solvent would hardly dissolve the porous resin base (PTFE) as evidence by the applicant's specification [0169].

12. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and Aubrey and Amundson and Ferrara, and further in view of Miura.

Teaching of the prior art is aforementioned.

Regarding claim 20, teaching applied to claim 3 and 19 is further applied to claim 20 to meet the limitations of the instant claim.

13. Claims 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and Aubrey and Amundson and Ferrara, and further in view of Hashizume.

Teaching of the prior art is aforementioned.

Regarding claim 21, teaching applied to claim 10 and 18 is further applied to claim 21 to meet the limitations of the instant claim.

Regarding claim 26, teaching applied to claim 7 and 18 is further applied to claim 26 to meet the limitations of the instant claim.

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14. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and Aubrey and Amundson and Ferrara, and further in view of Orio and Formanek.

Teaching of the prior art is aforementioned.

Regarding claim 23, teaching applied to claims 12-13 and 18 is further applied to claim 23 to meet the limitations of the instant claim.

15. Claims 29-30, 35, 37-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and Amundson and Ferrara further in view of Echigo [US 20020029906].

Teaching of the Haga in view of Dews and Amundson and Ferrara is aforementioned, but is silent to laminating porous resin layers as masks on both surface of a porous resin base to form a laminate of a 3-layer structure and removing the masks from the base. Echigo remedies this.

Regarding claim 29, Echigo teaches a process for manufacturing a circuit board using a removable mask film [title], where the masks are applied to both sides of the substrate [abstract], preferably by a lamination process [0026], where the substrate is a porous insulating substrate [0008]. Furthermore, Echigo teaches the removable film can be made of polyimide [0024] (porous resin in light of applicant's specification, paragraph 0074).

It would have been obvious to one with ordinary skills in the art at the time of the invention to laminate removable masking layers on both sides of the base. One would

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have been motivated to do so to decrease the effects of residual strain and improve fine dimensional accuracy [abstract] for a better product.

Regarding claims 29-30, 35, 37-40 teaching applied to claims 18-19, 22, 24-25, 27-28 is further applied to claims 29-30, 35, 37-40 to meet the limitations of the instant claims.

16. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and Amundson and Ferrara and Echigo, and further in view of Miura.

Teaching of the prior art is aforementioned.

Regarding claim 31, teaching applied to claim 20 and 29 is further applied to claim 31 to meet the limitations of the instant claim.

17. Claims 32-34, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haga in view of Dews and Amundson and Ferrara and Echigo, and further in view of Orio and Formanek.

Teaching of the prior art is aforementioned.

Regarding claims 32-34, teaching applied to claim 12-15 and 29 is further applied to claims 32-34 to meet the limitations of the instant claims.

Regarding claim 36, teaching applied to claim 32 is further applied to claim 36 to meet the limitations of the instant claim.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory

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obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-3, 18-20, 29-31, 35, 37-40 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 18-20 of copending Application No. 10/551459 in view of Dews and Aubrey and Amundson. Teaching of the prior art is aforementioned.

This is a provisional obviousness-type double patenting rejection.

4. Claims 1-3, 18-20, 29-31, 35, 37-40 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 11/660993 in view of Dews and Aubrey and Amundson and Ferrara. Teaching of the prior art is aforementioned.

This is a provisional obviousness-type double patenting rejection.

### **Conclusion**

1. No claim is allowed.

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2. Claims 1-40 are rejected for the reasons aforementioned.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MANDY C. LOUIE whose telephone number is (571)270-5353. The examiner can normally be reached on Monday to Friday, 7:30AM - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571)272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C. L./  
Examiner, Art Unit 1792

/Timothy H Meeks/  
Supervisory Patent Examiner, Art Unit 1792